organ can be placed in a good light; held firmly in a convenient position for such measurements or incisions as may be thought necessary. Neither is it always requisite to remove the heart. The pericardium should be carefully opened, a syringe used to remove the serum, and the measurements taken, the clots removed, etc., without disturbing its position. Should, however, it be deemed necessary to learn the weight of the organ, or the condition of the valves, it must be removed. In making the incision to display the semilunar valves of the pulmonary artery (which are here oddly termed the "pulmonary valves"), we have no directions given us, but are informed that the incision may be made to pass through one of the points of juncture "with a little care." Now the "little care" simply consists in inserting the finger from the right ventricle up along the pulmonary artery until the anterior of the three corpora Arantii is felt by the finger; a pair of blunt-pointed scissors may now be passed upward along the fingers and the valve divided at the "point of junction" with certainty.

In the event of disease involving the entire respiratory tract, or when the lesion is one requiring careful dissection, as, for example, in thoracic aneurism, the better plan after the parts have been carefully studied in position is to remove them as far up as the hyoid bone, and eviscerate the thoracic cavity together with the trachea and larynx. This can be easily effected by making a vertical incision through the skin along the median line of neck (the sternum having been previously removed), and the soft parts roughly dissected to the side. A second incision is now made above the hyoid bone through to the vertebral column. The trachea is now seized with one hand and pulled downward toward the thorax, the knife being held in the other to divide the great vessels at the root of the neck. Below this there is no obstruction to the easy separation of the base of the lungs, the trachea, and œsophagus, and the evulsion of the entire contents of the thorax out over the abdomen, where it is now held only by the pericardial attachment to the diaphragm, the aorta, and œsophagus. In this position the relations can be satisfactorily studied, and the organs may be restored if it be required; or, if it be permitted, can be removed by severing the attachments above mentioned.

Other examples might be cited showing, as we think, that too much knowledge of method on the part of the operator has been taken for granted, and too little of the author's knowledge has been given in the method presented.

There is a capital résumé of the varieties and position of thrombi, on p. 305, and of thrombosis of the portal vein on p. 187, and of a curious case of thrombosis of the superior mesenteric vein from perforation of the vessel by a fish-bone, which had probably effected its escape from the stomach near the pyloric orifice. Another case of thrombosis of portal vein from a similar cause is detailed.

We would be doing injustice to this valuable addition to our literature to omit mention of the careful descriptions of the morbid condition of the viscera, as shown in the sections on ruptures and wounds of arteries, on peritonitis, and on the morbid conditions of the liver. H. A.

ART. XXX.—*The Microscope and Microscopical Technology, a Text-book for Physicians and Students.* By Dr. HEINRICH FREY, Professor of Medicine in Zurich. Translated and edited by GEORGE R. CUTTER, M.D., from the fourth and last German edition. 8vo. pp. 658. New York: Wm. Wood & Co., 1872.

THIS work of Prof. Frey, long favourably known by all students of German medical literature, will doubtless, in its English dress, be welcomed by the profession as an acceptable addition to our standard works on the subject. In endeavouring to estimate its merits we must always keep in view that it is supplemented by other German works which discuss in greater detail points only superficially treated of or altogether untouched upon in the present work; thus, the well-known work of Harting is calculated to fill up the many gaps left in the consideration of the optical portion of the subject, while that of Dippel supplies us with a good account of vegetable histology, a subject not mentioned by our author. Indeed, in his preface he informs us that he looks upon his work as "concise" and "especially adapted to the practical wants of a medical man."

The work is divided into twenty-two sections, and of these the first four are devoted to a consideration of the optical principles involved in the construction of the instrument and of its accessories and of the methods of testing the latter. In treating of diaphragms the author gives the preference to cylindrical diaphragms over the rotary ones, which, on account of the convenience and rapidity with which one aperture may be substituted for another of different diameter, are almost exclusively employed in American and English instruments. He states, and we think justly, that it permits of finer gradations of illumination, but entirely omits to notice the effect produced by carrying it nearer to or removing it further from the object, according as we employ either convergent or divergent light. The relative advantages of central and oblique illumination and the subject of achromatic condensers are summarily dismissed in a few lines, without even a word on the principles of the construction of the latter, whether it is desirable that they should, as in most of our microscopes, be focussed on the object, or whether, as in the apparatus of Harting and others, their construction should admit of their being so used as to deliver parallel rays. We think that this must be a subject of regret to every thoughtful student, inasmuch as the successful use of the instrument is so dependent upon our knowledge of the principles involved in its construction, and we have all repeatedly seen how an accomplished microscopist can with a moderate power and suitable illumination demonstrate minute details in the structure of objects which the beginner can only satisfy himself of laboriously and by the use of much higher powers.

The account given of microscopic photography is also exceedingly insufficient; no allusion whatever being made to the most ordinary practical difficulties which stare every beginner in the face at the outset, as, for example, the fact that ordinary microscopic objectives are not achromatic (being either over or under corrected) and that consequently their actinic and visual foci do not coincide. Of course, therefore, the methods of overcoming this defect by monochromatic light, etc., are also passed over in silence. The author credits our countryman Riddell, with the production of the first binocular microscope, but evidently does not set a very high estimate on the practical utility of these instruments, and at page 51 says: "Opinions are divided with regard to the utility of these instruments; they have certainly been overestimated by many. We must leave it to the future to decide whether science is to derive any benefit from them." On the other hand, he maintains that the use of polarized light in the examination of tissues has a high scientific value in bringing out molecular relations which in ordinary light entirely escape notice, although, as he kindly informs us, the interpretation of the phenomena is often difficult, and the ignorance of medical men in the domain of optics great. The chapters treating of preservative fluids, chemical reagents, staining tissues, metallic impregnation, injections, etc., are exceedingly satisfactory and to the point. We can only regret that he has not discussed more in detail the staining with hæmatoxylin and the hardening of tissues by freezing. His remarks on the so-called "indifferent media," showing the destructive effect of water on tissue, and that all substances which have really any claim to be so considered must contain both crystalline and colloid substances, are admirable.

In giving directions for imbedding objects preparatory to making sections of them, he gives four methods, viz.: 1, in gum; 2, in wax and oil; 3, in paraffine, and, 4, in glycerine and gelatine. He, however, simply melts his paraffine, and makes no mention of the advantages derived by thinning it with either benzine or paraffine oil, and thus rendering it less hard and brittle. In mounting objects our author recommends highly Canada balsam, and thinks both gum damar and mastic "superfluous," "only to be used here and there by way of experiment."

In the chapter on "Epithelium, Hair, and Nails," we have a good wood-cut of the so-called "stachel" or "riff" cells, that is, cells in the lower and consequently younger and softer layer of epithelium, which are ridged or toothed at their margins and fit into one another as one cogwheel into another. Strange to say, however, there is no hint of the possibility of their being artificial productions caused by the action of the menstrua used in examining them.

In speaking of connective tissue Prof. Frey mentions "that Ranvier has made us acquainted with a useful method of examining tendinous tissues," and instances his investigations of the thin fibres obtained by tearing the caudal vertebræ of young rats from their tendinous attachments, but expresses no opinion on, and indeed gives no account of, the views which he has advanced concerning the structure of tendon and the cells of connective tissue. The chapter on muscles and nerves is one of the most interesting and complete in the book. There is no department of histological investigation which has of late years been more assiduously cultivated by able observers than that treating of the minute structure of nerves and muscles, and certainly there are few points more difficult of demonstration than the final ending of nerve fibres in muscle (both striated and unstriated). The *résumé* which is given of the present state of our knowledge on the subject, and the wood-cuts illustrating it, will therefore not fail to attract the attention of the reader. The defects of the chapter are those inseparable from the general plan of the work, and shared therefore perhaps in a higher degree by all others treating of the structure of tissue. Touching as they necessarily do at almost every page on the most intricate and extended inquiries in the domain of histology, pathology, and organic chemistry, the reader has unavoidably at times a sense of dissatisfaction from the bare allusion or the summary curtailment and dismissal which the author is obliged to resort to in order to keep within the limits which he has mapped out for himself in his work.

The extended field occupied by the remainder of the work, *e. g.*, vessels and glands, the digestive, urinary, respiratory, and sexual organs, the organs of special sense, offers an almost inexhaustible opportunity for criticism and comment. We believe, however, that enough has already been said to show the value and scope of the work; although we have pointed out what we consider defects in it, we are nevertheless convinced that every microscopist will find it a pleasant and instructive addition to his library, and would cordially recommend it to every one interested in the study of minute anatomy.

Dr. Cutter as translator has done his work very creditably, and the book will compare well in this respect with many of the translations with which the medical public have recently been favoured. Where he errs it is on account of a too literal rendering of the text, thus, *e. g.*, at page 40 we find, speaking of drawing microscopic objects, "It should not be forgotten to lay in the shadows symmetrically on the right side, as it is only thus that elevations and depressions can be brought forward in the picture." We venture to say that nine readers out of ten not having the original before them, would suppose that Prof. Frey intended the shadows in all drawings to be placed on the *right-hand* side; whereas he simply directs that the shadows should be laid in carefully in their proper place so as to render faithfully the elevations and depressions of the image (picture). Again, at p. 251 we find mention of a "Pravaz syringe," and think few readers would recognize in it the equivalent of what is familiar to every medical reader as a syringe for subcutaneous injection; moreover, Dr. Cutter insists throughout the book on calling magnifying glasses and simple microscopes "loups."

Some of the additions made by the translator will be most acceptable to the American reader; *e.g.*, pp. 81-86, "A History of the Microscope as an American Instrument;" pp. 112-117, a description of Dr. Edward Curtis's section cutter and his method of imbedding and cutting tissue, which is one of the most satisfactory with which we are acquainted.

In conclusion, we find at the end of the book a price list of many of the most prominent microscope makers, but are rather surprised that in the list of English makers, while Pillischer and Baker are mentioned, not a word is said in regard to either Powell and Lealand, or R. & J. Beck. W. F. N.

ART. XXXI.—*A Manual of Histology.* By Prof. S. STRICKER, of Vienna, Austria, in co-operation with TH. MEYNERT, F. VON RECKLINGHAUSEN, MAX SCHULTZE, W. WALDEYER, and others. Translated by HENRY POWER, of London; JAMES J. PUTNAM, and J. ORNE GREEN, of Boston; HENRY C. ENO, THOS. E. SATTERTHWAITE, EDW. C. SEGUIN, LUCIUS D. BULKLEY, EDW. L. KEYES, and FRANCIS E. DELAFIELD, of New York. American Translation edited by ALBERT H. BUCK, Ass't Aural Surgeon to the New York Eye and Ear Infirmary. With 431 Illustrations. 8vo. pp. 1106. New York: Wm. Wood & Co., 1872.

THE enterprising New York publishers of this valuable work have issued in a single volume the entire treatise edited by Stricker. This edition contains, translated by Americans, not only the special senses, which are the subjects of Vol. III. of the New Sydenham Society's edition, but also the matter of Vol. II. of Mr. Power's translation.

Having already noticed the contents of Vols. I. and II. of the New Sydenham Society's edition, we will confine ourselves to the remaining subjects.

Chap. XXXIV., on the *Organ of Taste*, is by TH. W. ENGELMANN, of Utrecht, and is translated by A. H. BUCK. Most interesting and important is the description of the *taste-buds* (Geschmacksknospen), *taste-bulbs* (Geschmackszwiebeln), or *taste-beakers* (*Schmeckbecher*), as they are variously called. These are described as occupying cavities in the epithelium of the mucous membrane of the tongue, fitting them perfectly at every point. They are found more particularly in most sensitive (as to taste) parts, as the upper surface of the root (especially the circumvallate papillæ), the edges and tips of the tongue, and probably the anterior portion of the soft palate.

Chap. XXXV., *The Organ of Smell*, by Prof. BABUCHIN, is translated by FRANCIS E. DELAFIELD. We were much confused and delayed in our understanding of the first part of this chapter by an evident transposition of the text descriptive of fig. 304 to fig. 303, and of that of 303 to 304. If this transposition occurred